

## SEQUENCE LISTING

&lt;110&gt; GENSET S.A.

<120> USE OF PP2A PHOSPHATASE MODULATORS IN THE TREATMENT  
OF MENTAL DISORDERS

&lt;130&gt; 794A WO

&lt;150&gt; US 60/391,359

&lt;151&gt; 2002-06-25

&lt;160&gt; 47

&lt;170&gt; PatentIn version 3.1

&lt;210&gt; 1

&lt;211&gt; 1932

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1932)

&lt;223&gt;

&lt;400&gt; 1

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 Met Val Gln Lys Ser Arg Asn Gly Gly Val Tyr Pro Gly Pro Ser Gly  
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gag aag aag ctg aag gtg ggc ttc gtg ggg ctg gac ccc ggc gcg ccc 96  
 Glu Lys Lys Leu Lys Val Gly Phe Val Gly Leu Asp Pro Gly Ala Pro  
 20 25 30

gac tcc acc cgg gac ggg gcg ctg ctg atc gcc ggc tcc gag gcc ccc 144  
 Asp Ser Thr Arg Asp Gly Ala Leu Leu Ile Ala Gly Ser Glu Ala Pro  
 35 40 45

aag cgc ggc agc atc ctc agc aaa cct cgc gcg ggc ggc gcg ggc gcc 192  
 Lys Arg Gly Ser Ile Leu Ser Lys Pro Arg Ala Gly Gly Ala Gly Ala  
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ggg aag ccc ccc aag cgc aac gcc ttc tac cgc aag ctg cag aat ttc 240  
 Gly Lys Pro Pro Lys Arg Asn Ala Phe Tyr Arg Lys Leu Gln Asn Phe  
 65 70 75 80

ctc tac aac gtg ctg gag cgg ccg cgc ggc tgg gcg ttc atc tac cac 288  
 Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
 85 90 95

gcc tac gtg ttc ctc ctg gtt ttc tcc tgc ctc gtg ctg tct gtg ttt 336  
 Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
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 Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
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ctg gaa atc gtg act atc gtg gtg ttt ggc gtg gag tac ttc gtg cgg 432  
 Leu Glu Ile Val Thr Ile Val Val Phe Gly Val Glu Tyr Phe Val Arg  
           130              135              140

atc tgg gcc gca ggc tgc tgc tgc cgg tac cgt ggc tgg agg ggg cgg 480  
 Ile Trp Ala Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Arg Gly Arg  
           145              150              155              160

ctc aag ttt gcc cgg aaa ccg ttc tgt gtg att gac atc atg gtg ctc 528  
 Leu Lys Phe Ala Arg Lys Pro Phe Cys Val Ile Asp Ile Met Val Leu  
           165              170              175

atc gcc tcc att gcg gtg ctg gcc gcc ggc tcc cag ggc aac gtc ttt 576  
 Ile Ala Ser Ile Ala Val Leu Ala Ala Gly Ser Gln Gly Asn Val Phe  
           180              185              190

gcc aca tct gcg ctc cgg agc ctg cgc ttc ctg cag att ctg cgg atg 624  
 Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
           195              200              205

atc cgc atg gac cgg cgg gga ggc acc tgg aag ctg ctg ggc tct gtg 672  
 Ile Arg Met Asp Arg Arg Gly Gly Thr Trp Lys Leu Leu Gly Ser Val  
           210              215              220

gtc tat gcc cac agc aag gag ctg gtc act gcc tgg tac atc ggc ttc 720  
 Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
           225              230              235              240

ctt tgt ctc atc ctg gcc tcg ttc ctg gtg tac ttg gca gag aag ggg 768  
 Leu Cys Leu Ile Leu Ala Ser Phe Leu Val Tyr Leu Ala Glu Lys Gly  
           245              250              255

gag aac gac cac ttt gac acc tac gcg gat gca ctc tgg tgg ggc ctg 816  
 Glu Asn Asp His Phe Asp Thr Tyr Ala Asp Ala Leu Trp Trp Gly Leu  
           260              265              270

atc acg ctg acc acc att ggc tac ggg gac aag tac ccc cag acc tgg 864  
 Ile Thr Leu Thr Thr Ile Gly Tyr Gly Asp Lys Tyr Pro Gln Thr Trp  
           275              280              285

aac ggc agg ctc ctt gcg gca acc ttc acc ctc atc ggt gtc tcc ttc 912

Asn Gly Arg Leu Leu Ala Ala Thr Phe Thr Leu Ile Gly Val Ser Phe  
 290 295 300

ttc gcg ctg cct gca ggc atc ttg ggg tct ggg ttt gcc ctg aag gtt 960  
 Phe Ala Leu Pro Ala Gly Ile Leu Gly Ser Gly Phe Ala Leu Lys Val  
 305 310 315 320

cag gag cag cac agg cag aag cac ttt gag aag agg cgg aac ccg gca 1008  
 Gln Glu Gln His Arg Gln Lys His Phe Glu Lys Arg Arg Asn Pro Ala  
 325 330 335

gca ggc ctg atc cag tcg gcc tgg aga ttc tac gcc acc aac ctc tcg 1056  
 Ala Gly Leu Ile Gln Ser Ala Trp Arg Phe Tyr Ala Thr Asn Leu Ser  
 340 345 350

cgc aca gac ctg cac tcc acg tgg cag tac tac gag cga acg gtc acc 1104  
 Arg Thr Asp Leu His Ser Thr Trp Gln Tyr Tyr Glu Arg Thr Val Thr  
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gtg ccc atg tac agt tcg caa act caa acc tac ggg gcc tcc aga ctt 1152  
 Val Pro Met Tyr Ser Ser Gln Thr Gln Thr Tyr Gly Ala Ser Arg Leu  
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atc ccc ccg ctg aac cag ctg gag ctg ctg agg aac ctc aag agt aaa 1200  
 Ile Pro Pro Leu Asn Gln Leu Glu Leu Leu Arg Asn Leu Lys Ser Lys  
 385 390 395 400

tct gga ctc gct ttc agg aag gac ccc ccg ccg gag ccg tct cca agt 1248  
 Ser Gly Leu Ala Phe Arg Lys Asp Pro Pro Pro Glu Pro Ser Pro Ser  
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aaa ggc agc ccg tgc aga ggg ccc ctg tgt gga tgc tgc ccc gga cgc 1296  
 Lys Gly Ser Pro Cys Arg Gly Pro Leu Cys Gly Cys Cys Pro Gly Arg  
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tct agc cag aag gtc agt ttg aaa gat cgt gtc ttc tcc agc ccc cga 1344  
 Ser Ser Gln Lys Val Ser Leu Lys Asp Arg Val Phe Ser Ser Pro Arg  
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ggc gtg gct gcc aag ggg aag ggg tcc ccg cag gcc cag act gtg agg 1392  
 Gly Val Ala Ala Lys Gly Lys Gly Ser Pro Gln Ala Gln Thr Val Arg  
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cgg tca ccc agc gcc gac cag agc ctc gag gac agc ccc agc aag gtg 1440  
 Arg Ser Pro Ser Ala Asp Gln Ser Leu Glu Asp Ser Pro Ser Lys Val  
 465 470 475 480

ccc aag agc tgg agc ttc ggg gac cgc agc cgg gca cgc cag gct ttc 1488  
 Pro Lys Ser Trp Ser Phe Gly Asp Arg Ser Arg Ala Arg Gln Ala Phe  
 485 490 495

cgc atc aag ggt gcc gcg tca cgg cag aac tca gaa gaa gca agc ctc 1536  
 Arg Ile Lys Gly Ala Ala Ser Arg Gln Asn Ser Glu Glu Ala Ser Leu  
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ccc gga gag gac att gtg gat gac aag agc tgc ccc tgc gag ttt gtg 1584  
 Pro Gly Glu Asp Ile Val Asp Asp Lys Ser Cys Pro Cys Glu Phe Val  
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acc gag gac ctg acc ccg ggc ctc aaa gtc agc atc aga gcc gtg tgt 1632  
 Thr Glu Asp Leu Thr Pro Gly Leu Lys Val Ser Ile Arg Ala Val Cys  
 530 535 540

gtc atg cgg ttc ctg gtg tcc aag cgg aag ttc aag gag agc ctg cgg 1680  
 Val Met Arg Phe Leu Val Ser Lys Arg Lys Phe Lys Glu Ser Leu Arg  
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ccc tac gac gtg atg gac gtc atc gag cag tac tca gcc ggc cac ctg 1728  
 Pro Tyr Asp Val Met Asp Val Ile Glu Gln Tyr Ser Ala Gly His Leu  
 565 570 575

gac atg ctg tcc cga att aag agc ctg cag tcc agg caa gag ccc cgc 1776  
 Asp Met Leu Ser Arg Ile Lys Ser Leu Gln Ser Arg Gln Glu Pro Arg  
 580 585 590

ctg cct gtc cag cag ggg aca aga acg ggg tgg gct tct ggg aca aag 1824  
 Leu Pro Val Gln Gln Gly Thr Arg Thr Gly Trp Ala Ser Gly Thr Lys  
 595 600 605

ccc act gtg gcc cat ggt ggg agt gca ggg ggt gtg tgg gcg ggg cct 1872  
 Pro Thr Val Ala His Gly Gly Ser Ala Gly Gly Val Trp Ala Gly Pro  
 610 615 620

cct ccc cac cca cgt cgg cct ctg tca gct tct gtt gtg tct tca caa 1920  
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 Ser Leu Phe

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<212> PRT

<213> Homo sapiens

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Asp Ser Thr Arg Asp Gly Ala Leu Leu Ile Ala Gly Ser Glu Ala Pro  
35            40            45

Lys Arg Gly Ser Ile Leu Ser Lys Pro Arg Ala Gly Gly Ala Gly Ala  
50            55            60

Gly Lys Pro Pro Lys Arg Asn Ala Phe Tyr Arg Lys Leu Gln Asn Phe  
65            70            75            80

Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
85            90            95

Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
100            105            110

Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
115            120            125

Leu Glu Ile Val Thr Ile Val Val Phe Gly Val Glu Tyr Phe Val Arg  
130            135            140

Ile Trp Ala Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Arg Gly Arg  
145            150            155            160

Leu Lys Phe Ala Arg Lys Pro Phe Cys Val Ile Asp Ile Met Val Leu  
165            170            175

Ile Ala Ser Ile Ala Val Leu Ala Ala Gly Ser Gln Gly Asn Val Phe  
180            185            190

Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
195            200            205

Ile Arg Met Asp Arg Arg Gly Gly Thr Trp Lys Leu Leu Gly Ser Val  
210 215 220

Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
225 230 235 240

Leu Cys Leu Ile Leu Ala Ser Phe Leu Val Tyr Leu Ala Glu Lys Gly  
245 250 255

Glu Asn Asp His Phe Asp Thr Tyr Ala Asp Ala Leu Trp Trp Gly Leu  
260 265 270

Ile Thr Leu Thr Thr Ile Gly Tyr Gly Asp Lys Tyr Pro Gln Thr Trp  
275 280 285

Asn Gly Arg Leu Leu Ala Ala Thr Phe Thr Leu Ile Gly Val Ser Phe  
290 295 300

Phe Ala Leu Pro Ala Gly Ile Leu Gly Ser Gly Phe Ala Leu Lys Val  
305 310 315 320

Gln Glu Gln His Arg Gln Lys His Phe Glu Lys Arg Arg Asn Pro Ala  
325 330 335

Ala Gly Leu Ile Gln Ser Ala Trp Arg Phe Tyr Ala Thr Asn Leu Ser  
340 345 350

Arg Thr Asp Leu His Ser Thr Trp Gln Tyr Tyr Glu Arg Thr Val Thr  
355 360 365

Val Pro Met Tyr Ser Ser Gln Thr Gln Thr Tyr Gly Ala Ser Arg Leu  
370 375 380

Ile Pro Pro Leu Asn Gln Leu Glu Leu Leu Arg Asn Leu Lys Ser Lys  
385 390 395 400

Ser Gly Leu Ala Phe Arg Lys Asp Pro Pro Pro Glu Pro Ser Pro Ser

405                      410                      415

Lys Gly Ser Pro Cys Arg Gly Pro Leu Cys Gly Cys Cys Pro Gly Arg  
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Ser Ser Gln Lys Val Ser Leu Lys Asp Arg Val Phe Ser Ser Pro Arg  
435                      440                      445

Gly Val Ala Ala Lys Gly Lys Gly Ser Pro Gln Ala Gln Thr Val Arg  
450                      455                      460

Arg Ser Pro Ser Ala Asp Gln Ser Leu Glu Asp Ser Pro Ser Lys Val  
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Pro Lys Ser Trp Ser Phe Gly Asp Arg Ser Arg Ala Arg Gln Ala Phe  
485                      490                      495

Arg Ile Lys Gly Ala Ala Ser Arg Gln Asn Ser Glu Glu Ala Ser Leu  
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Pro Gly Glu Asp Ile Val Asp Asp Lys Ser Cys Pro Cys Glu Phe Val  
515                      520                      525

Thr Glu Asp Leu Thr Pro Gly Leu Lys Val Ser Ile Arg Ala Val Cys  
530                      535                      540

Val Met Arg Phe Leu Val Ser Lys Arg Lys Phe Lys Glu Ser Leu Arg  
545                      550                      555                      560

Pro Tyr Asp Val Met Asp Val Ile Glu Gln Tyr Ser Ala Gly His Leu  
565                      570                      575

Asp Met Leu Ser Arg Ile Lys Ser Leu Gln Ser Arg Gln Glu Pro Arg  
580                      585                      590

Leu Pro Val Gln Gln Gly Thr Arg Thr Gly Trp Ala Ser Gly Thr Lys  
595                      600                      605

Pro Thr Val Ala His Gly Gly Ser Ala Gly Gly Val Trp Ala Gly Pro  
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Pro Pro His Pro Arg Arg Pro Leu Ser Ala Ser Val Val Ser Ser Gln  
 625 630 635 640

Ser Leu Phe

<210> 3

<211> 1878

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(1878)

<223>

<400> 3

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gag aag aag ctg aag gtg ggc ttc gtg ggg ctg gac ccc ggc gcg ccc 96  
 Glu Lys Lys Leu Lys Val Gly Phe Val Gly Leu Asp Pro Gly Ala Pro  
 20 25 30

gac tcc acc cgg gac ggg gcg ctg ctg atc gcc ggc tcc gag gcc ccc 144  
 Asp Ser Thr Arg Asp Gly Ala Leu Leu Ile Ala Gly Ser Glu Ala Pro  
 35 40 45

aag cgc ggc agc atc ctc agc aaa cct cgc gcg ggc ggc gcg ggc gcc 192  
 Lys Arg Gly Ser Ile Leu Ser Lys Pro Arg Ala Gly Gly Ala Gly Ala  
 50 55 60

ggg aag ccc ccc aag cgc aac gcc ttc tac cgc aag ctg cag aat ttc 240  
 Gly Lys Pro Pro Lys Arg Asn Ala Phe Tyr Arg Lys Leu Gln Asn Phe  
 65 70 75 80

ctc tac aac gtg ctg gag cgg ccg cgc ggc tgg gcg ttc atc tac cac 288  
 Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
 85 90 95

gcc tac gtg ttc ctc ctg gtt ttc tcc tgc ctc gtg ctg tct gtg ttt 336  
 Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe

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 tcc acc atc aag gag tat gag aag agc tcg gag ggg gcc ctc tac atc    384  
 Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
      115                      120                      125  
 ctg gaa atc gtg act atc gtg gtg ttt ggc gtg gag tac ttc gtg cgg    432  
 Leu Glu Ile Val Thr Ile Val Val Phe Gly Val Glu Tyr Phe Val Arg  
      130                      135                      140  
 atc tgg gcc gca ggc tgc tgc tgc cgg tac cgt ggc tgg agg ggg cgg    480  
 Ile Trp Ala Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Arg Gly Arg  
      145                      150                      155                      160  
 ctc aag ttt gcc cgg aaa ccg ttc tgt gtg att gac atc atg gtg ctc    528  
 Leu Lys Phe Ala Arg Lys Pro Phe Cys Val Ile Asp Ile Met Val Leu  
      165                      170                      175  
 atc gcc tcc att gcg gtg ctg gcc gcc ggc tcc cag ggc aac gtc ttt    576  
 Ile Ala Ser Ile Ala Val Leu Ala Ala Gly Ser Gln Gly Asn Val Phe  
      180                      185                      190  
 gcc aca tct gcg ctc cgg agc ctg cgc ttc ctg cag att ctg cgg atg    624  
 Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
      195                      200                      205  
 atc cgc atg gac cgg cgg gga ggc acc tgg aag ctg ctg ggc tct gtg    672  
 Ile Arg Met Asp Arg Arg Gly Gly Thr Trp Lys Leu Leu Gly Ser Val  
      210                      215                      220  
 gtc tat gcc cac agc aag gag ctg gtc act gcc tgg tac atc ggc ttc    720  
 Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
      225                      230                      235                      240  
 ctt tgt ctc atc ctg gcc tcg ttc ctg gtg tac ttg gca gag aag ggg    768  
 Leu Cys Leu Ile Leu Ala Ser Phe Leu Val Tyr Leu Ala Glu Lys Gly  
      245                      250                      255  
 gag aac gac cac ttt gac acc tac gcg gat gca ctc tgg tgg ggc ctg    816  
 Glu Asn Asp His Phe Asp Thr Tyr Ala Asp Ala Leu Trp Trp Gly Leu  
      260                      265                      270  
 atc acg ctg acc acc att ggc tac ggg gac aag tac ccc cag acc tgg    864  
 Ile Thr Leu Thr Thr Ile Gly Tyr Gly Asp Lys Tyr Pro Gln Thr Trp  
      275                      280                      285  
 aac ggc agg ctc ctt gcg gca acc ttc acc ctc atc ggt gtc tcc ttc    912  
 Asn Gly Arg Leu Leu Ala Ala Thr Phe Thr Leu Ile Gly Val Ser Phe  
      290                      295                      300

ttc gcg ctg cct gca ggc atc ttg ggg tct ggg ttt gcc ctg aag gtt 960  
 Phe Ala Leu Pro Ala Gly Ile Leu Gly Ser Gly Phe Ala Leu Lys Val  
 305 310 315 320

cag gag cag cac agg cag aag cac ttt gag aag agg cgg aac ccg gca 1008  
 Gln Glu Gln His Arg Gln Lys His Phe Glu Lys Arg Arg Asn Pro Ala  
 325 330 335

gca ggc ctg atc cag tcg gcc tgg aga ttc tac gcc acc aac ctc tcg 1056  
 Ala Gly Leu Ile Gln Ser Ala Trp Arg Phe Tyr Ala Thr Asn Leu Ser  
 340 345 350

cgc aca gac ctg cac tcc acg tgg cag tac tac gag cga acg gtc acc 1104  
 Arg Thr Asp Leu His Ser Thr Trp Gln Tyr Tyr Glu Arg Thr Val Thr  
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gtg ccc atg tac agt tcg caa act caa acc tac ggg gcc tcc aga ctt 1152  
 Val Pro Met Tyr Ser Ser Gln Thr Gln Thr Tyr Gly Ala Ser Arg Leu  
 370 375 380

atc ccc ccg ctg aac cag ctg gag ctg ctg agg aac ctc aag agt aaa 1200  
 Ile Pro Pro Leu Asn Gln Leu Glu Leu Leu Arg Asn Leu Lys Ser Lys  
 385 390 395 400

tct gga ctc gct ttc agg aag gac ccc ccg ccg gag ccg tct cca agc 1248  
 Ser Gly Leu Ala Phe Arg Lys Asp Pro Pro Pro Glu Pro Ser Pro Ser  
 405 410 415

cag aag gtc agt ttg aaa gat cgt gtc ttc tcc agc ccc cga ggc gtg 1296  
 Gln Lys Val Ser Leu Lys Asp Arg Val Phe Ser Ser Pro Arg Gly Val  
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gct gcc aag ggg aag ggg tcc ccg cag gcc cag act gtg agg cgg tca 1344  
 Ala Ala Lys Gly Lys Gly Ser Pro Gln Ala Gln Thr Val Arg Arg Ser  
 435 440 445

ccc agc gcc gac cag agc ctc gag gac agc ccc agc aag gtg ccc aag 1392  
 Pro Ser Ala Asp Gln Ser Leu Glu Asp Ser Pro Ser Lys Val Pro Lys  
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agc tgg agc ttc ggg gac cgc agc cgg gca cgc cag gct ttc cgc atc 1440  
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 465 470 475 480

aag ggt gcc gcg tca cgg cag aac tca gaa gaa gca agc ctc ccc gga 1488  
 Lys Gly Ala Ala Ser Arg Gln Asn Ser Glu Glu Ala Ser Leu Pro Gly  
 485 490 495

gag gac att gtg gat gac aag agc tgc ccc tgc gag ttt gtg acc gag 1536  
 Glu Asp Ile Val Asp Asp Lys Ser Cys Pro Cys Glu Phe Val Thr Glu



Asp Ser Thr Arg Asp Gly Ala Leu Leu Ile Ala Gly Ser Glu Ala Pro  
35 40 45

Lys Arg Gly Ser Ile Leu Ser Lys Pro Arg Ala Gly Gly Ala Gly Ala  
50 55 60

Gly Lys Pro Pro Lys Arg Asn Ala Phe Tyr Arg Lys Leu Gln Asn Phe  
65 70 75 80

Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
85 90 95

Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
100 105 110

Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
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Leu Glu Ile Val Thr Ile Val Val Phe Gly Val Glu Tyr Phe Val Arg  
130 135 140

Ile Trp Ala Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Arg Gly Arg  
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Ile Ala Ser Ile Ala Val Leu Ala Ala Gly Ser Gln Gly Asn Val Phe  
180 185 190

Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
195 200 205

Ile Arg Met Asp Arg Arg Gly Gly Thr Trp Lys Leu Leu Gly Ser Val  
210 215 220

Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
225 230 235 240



Leu Cys Leu Ile Leu Ala Ser Phe Leu Val Tyr Leu Ala Glu Lys Gly  
245 250 255

Glu Asn Asp His Phe Asp Thr Tyr Ala Asp Ala Leu Trp Trp Gly Leu  
260 265 270

Ile Thr Leu Thr Thr Ile Gly Tyr Gly Asp Lys Tyr Pro Gln Thr Trp  
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Asn Gly Arg Leu Leu Ala Ala Thr Phe Thr Leu Ile Gly Val Ser Phe  
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Phe Ala Leu Pro Ala Gly Ile Leu Gly Ser Gly Phe Ala Leu Lys Val  
305 310 315 320

Gln Glu Gln His Arg Gln Lys His Phe Glu Lys Arg Arg Asn Pro Ala  
325 330 335

Ala Gly Leu Ile Gln Ser Ala Trp Arg Phe Tyr Ala Thr Asn Leu Ser  
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Arg Thr Asp Leu His Ser Thr Trp Gln Tyr Tyr Glu Arg Thr Val Thr  
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Val Pro Met Tyr Ser Ser Gln Thr Gln Thr Tyr Gly Ala Ser Arg Leu  
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Ser Gly Leu Ala Phe Arg Lys Asp Pro Pro Pro Glu Pro Ser Pro Ser  
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Gln Lys Val Ser Leu Lys Asp Arg Val Phe Ser Ser Pro Arg Gly Val  
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Ala Ala Lys Gly Lys Gly Ser Pro Gln Ala Gln Thr Val Arg Arg Ser  
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Pro Ser Ala Asp Gln Ser Leu Glu Asp Ser Pro Ser Lys Val Pro Lys  
450 455 460

Ser Trp Ser Phe Gly Asp Arg Ser Arg Ala Arg Gln Ala Phe Arg Ile  
465 470 475 480

Lys Gly Ala Ala Ser Arg Gln Asn Ser Glu Glu Ala Ser Leu Pro Gly  
485 490 495

Glu Asp Ile Val Asp Asp Lys Ser Cys Pro Cys Glu Phe Val Thr Glu  
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Asp Leu Thr Pro Gly Leu Lys Val Ser Ile Arg Ala Val Cys Val Met  
515 520 525

Arg Phe Leu Val Ser Lys Arg Lys Phe Lys Glu Ser Leu Arg Pro Tyr  
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Asp Val Met Asp Val Ile Glu Gln Tyr Ser Ala Gly His Leu Asp Met  
545 550 555 560

Leu Ser Arg Ile Lys Ser Leu Gln Ser Arg Gln Glu Pro Arg Leu Pro  
565 570 575

Val Gln Gln Gly Thr Arg Thr Gly Trp Ala Ser Gly Thr Lys Pro Thr  
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His Pro Arg Arg Pro Leu Ser Ala Ser Val Val Ser Ser Gln Ser Leu  
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Phe  
625

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 Glu Lys Lys Leu Lys Val Gly Phe Val Gly Leu Asp Pro Gly Ala Pro  
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 gac tcc acc cgg gac ggg gcg ctg ctg atc gcc ggc tcc gag gcc ccc 144  
 Asp Ser Thr Arg Asp Gly Ala Leu Leu Ile Ala Gly Ser Glu Ala Pro  
 35 40 45  
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 Lys Arg Gly Ser Ile Leu Ser Lys Pro Arg Ala Gly Gly Ala Gly Ala  
 50 55 60  
 ggg aag ccc ccc aag cgc aac gcc ttc tac cgc aag ctg cag aat ttc 240  
 Gly Lys Pro Pro Lys Arg Asn Ala Phe Tyr Arg Lys Leu Gln Asn Phe  
 65 70 75 80  
 ctc tac aac gtg ctg gag cgg ccg cgc ggc tgg gcg ttc atc tac cac 288  
 Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
 85 90 95  
 gcc tac gtg ttc ctc ctg gtt ttc tcc tgc ctc gtg ctg tct gtg ttt 336  
 Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
 100 105 110  
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 Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
 115 120 125  
 ctg gaa atc gtg act atc gtg gtg ttt ggc gtg gag tac ttc gtg cgg 432  
 Leu Glu Ile Val Thr Ile Val Val Phe Gly Val Glu Tyr Phe Val Arg  
 130 135 140  
 atc tgg gcc gca ggc tgc tgc tgc cgg tac cgt ggc tgg agg ggg cgg 480

Ile Trp Ala Ala Gly Cys Cys Cys Arg Tyr Arg Gly Trp Arg Gly Arg  
 145 150 155 160

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gcc aca tct gcg ctc cgg agc ctg cgc ttc ctg cag att ctg cgg atg 624  
 Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
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 Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
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ctt tgt ctc atc ctg gcc tcg ttc ctg gtg tac ttg gca gag aag ggg 768  
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gag aac gac cac ttt gac acc tac gcg gat gca ctc tgg tgg ggc ctg 816  
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Leu Tyr Asn Val Leu Glu Arg Pro Arg Gly Trp Ala Phe Ile Tyr His  
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Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
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Ala Thr Ser Ala Leu Arg Ser Leu Arg Phe Leu Gln Ile Leu Arg Met  
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Val Tyr Ala His Ser Lys Glu Leu Val Thr Ala Trp Tyr Ile Gly Phe  
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Leu Cys Leu Ile Leu Ala Ser Phe Leu Val Tyr Leu Ala Glu Lys Gly  
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Asn Gly Arg Leu Leu Ala Ala Thr Phe Thr Leu Ile Gly Val Ser Phe.

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Pro Ser Lys Val Pro Lys Ser Trp Ser Phe Gly Asp Arg Ser Arg Ala  
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Arg Gln Ala Phe Arg Ile Lys Gly Ala Ala Ser Arg Gln Asn Ser Glu  
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Ala Tyr Val Phe Leu Leu Val Phe Ser Cys Leu Val Leu Ser Val Phe  
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Ser Thr Ile Lys Glu Tyr Glu Lys Ser Ser Glu Gly Ala Leu Tyr Ile  
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Asp Met Leu Ser Arg Ile Lys Ser Leu Gln Ser Arg Val Asp Gln Ile  
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Val Gly Arg Gly Pro Ala Ile Thr Asp Lys Asp Arg Thr Lys Gly Pro  
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Ala Glu Ala Glu Leu Pro Glu Asp Pro Ser Met Met Gly Arg Leu Gly  
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Ala Tyr Phe Gly Ala Lys Glu Pro Glu Pro Ala Pro Pro Tyr His Ser  
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Pro Ala Ala Pro Pro Val Gln Cys Pro Pro Ser Thr Ser Trp Gln Pro  
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Glu Asp Thr Pro Gly Cys Arg Pro Pro Glu Gly Asn Leu Arg Asp Ser  
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Asp Tyr Leu Lys Ser Leu Glu Ile Glu Glu Lys Ile Asn Lys Ile Lys  
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Lys Thr Ile Lys Leu Trp Lys Ile Thr Glu Arg Asp Lys Arg Pro Glu  
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Gly Tyr Asn Leu Lys Asp Glu Glu Gly Lys Leu Lys Asp Leu Ser Thr  
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Leu Cys Asp Lys His Ser Lys Leu Phe Glu Glu Pro Glu Asp Pro Ser  
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Phe Ser His Ser Asp Arg Tyr Met Leu Thr Arg Asp Tyr Leu Thr Val  
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Val His Asp Tyr Leu Arg Ser Lys Leu Cys Ser Leu Tyr Glu Asn Asp  
325 330 335

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Thr Lys Arg Asp Val Thr Leu Glu Ala Ser Arg Glu Ser Ser Lys Pro  
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&lt;213&gt; Artificial

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